

**DECLARATION OF  
DR. MARCELO HIRSCHLER**

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Attorneys for Defendants MACY'S WEST STORES, INC.  
 and RALPH LAUREN CORPORATION

**UNITED STATES DISTRICT COURT  
 SOUTHERN DISTRICT OF CALIFORNIA**

JESUS ROMERO, a Minor, by and through  
 his Guardian ad Litem, MERIDA RAMOS;  
 MARCOS ROMERO, a Minor, by and  
 through his Guardian ad Litem, MERIDA  
 RAMOS; and PERLA ROMERO, a Minor,  
 by and through her Guardian ad Litem,  
 MERIDA RAMOS,

Plaintiffs,

v.

MACY'S, INC., fka FEDERATED  
 DEPARTMENT STORES, INC., a  
 Delaware corporation; RALPH LAUREN  
 CORPORATION, a Delaware corporation;  
 and DOES 1 through 50, Inclusive,

Defendants.

**Case No.: 15CV815-GPC-MDD.**

**DECLARATION OF MARCELO  
 HIRSCHLER IN SUPPORT OF  
 MOTION FOR SUMMARY  
 JUDGMENT**

**Date:  
 Time:  
 Dept:**

1 I, Dr. Marcelo M. Hirschler, declare as follows:

- 2 1. The facts declared herein are true of my own knowledge and, if called upon to  
3 testify, I could and would testify competently thereto.
- 4 2. A true and correct copy of my current curriculum vitae is attached hereto as  
5 Exhibit 1.
- 6 3. I graduated from the University of Buenos Aires, where I obtained a first  
7 degree in Physical Chemistry and a PhD in Polymer Chemistry, in 1975.
- 8 4. After a career in academic research, in Argentina and the United Kingdom, I  
9 managed fire issues including the fire testing and research laboratory at a  
10 plastics manufacturer, BFGoodrich, between 1984 and 1991 (with large and  
11 small scale heat release test instruments, and other fire test equipment).
- 12 5. I chaired the US Technical Fire Subcommittees of the Coordinating  
13 Committee for Fire Safety (Society of the Plastics Industry) and of the Vinyl  
14 Institute between 1986 and 1991.
- 15 6. Since 1995, I have been the President of GBH International, a consulting  
16 company which provides fire litigation support, and assistance with codes and  
17 standards, and also conducts fire testing and research as well as representing a  
18 manufacturer of fire testing equipment.
- 19 7. I have specialized in fire issues for over 30 years and have published some  
20 500 papers and six books: "The Combustion of Organic Polymers" (Oxford  
21 University Press, with Charles F. Cullis), "Fire Hazard and Fire Risk  
22 Assessment, ASTM STP 1150" (Editor, ASTM), "Carbon Monoxide and  
23 Human Lethality: Fire and Non Fire Studies", (Editor, Chapman & Hall),  
24 "Fire Calorimetry", NTIS, (Edited by Richard Lyon and Marcelo Hirschler),  
25 "Electrical Insulating Materials, International Issues, ASTM STP 1376"  
26 (Editor, ASTM) and "Practical Guide to Smoke and Combustion Products  
27  
28

1 from Burning Polymers – Generation, Assessment and Control” (Smithers  
2 Rapra, with Sergei Levchik and Edward D. Weil).

3 8. I am also very active in developing fire standards (both nationally and  
4 internationally) and codes. I am a member of ASTM (American Society for  
5 Testing and Materials) and a number of its committees. This includes  
6 committees E05 (fire standards), C16 (thermal insulation), D07 (wood), D09  
7 (electrical insulation), D11 (rubber), D13 (textiles), D20 (plastics), E34  
8 (occupational health & safety), F07 (aircraft), F08 (sports equipment), F15  
9 (consumer products), F23 (protective clothing), F25 (ships), F33 (correctional  
10 facilities) and F44 (general aviation). I chair, and have chaired, numerous  
11 ASTM standards subcommittees and task groups and have been instrumental  
12 in developing modern heat release standards on small scale or full scale  
13 testing of furniture and cables by heat release measurements (ASTM E1537,  
14 E1590, E1822, D5424, D5537, F1550), hazard assessment (ASTM D5425,  
15 E2061), room scale fire testing (ASTM E603, E2067) and ignitability (ASTM  
16 E3020).

17 9. I am a member of NFPA (National Fire Protection Association) technical  
18 committees for the Life Safety Code (NFPA 101) and Building Code (NFPA  
19 5000), as well as the NFPA Fire Tests technical committee, the technical  
20 committee on Hazard and Risk of Contents and Furnishings, the technical  
21 committee on air conditioning the technical committee on Merchant Vessels.

22 10. I am a former member of a code making panel of the National Electrical Code  
23 and the committee on rail fire safety and I chaired the advisory committee on  
24 the NFPA glossary of terminology that overhauled the NFPA sets of  
25 definitions.  
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- 1 11. I have provided expert advice in a large number of fire litigation cases,  
2 including being involved in trials and in depositions in various states  
3 throughout the United States, including matters in which I have provided  
4 expert testimony on fabric flammability. (Attached hereto as Exhibit 2 is a  
5 true and correct listing of the expert testimony I have provided).
- 6 12. I am an associate editor of the journal Fire and Materials and the editor of the  
7 Fire Safety & Technology Bulletin. I am also on the Editorial Board of  
8 several scientific fire journals (Fire Safety Journal, Journal of Fire Sciences,  
9 Journal of Testing and Evaluation).
- 10 13. During my academic career I worked in various University Chemistry  
11 Departments on issues of polymer combustion, polymer chemistry and fire  
12 retardance of polymers, as well as gas and liquid phase combustion. After  
13 university, I continued managing research, both in my industrial laboratory  
14 and for various clients.
- 15 14. It is my understanding that Plaintiff Jesus Romero alleges that he suffered  
16 burns to his body while he was wearing a Ralph Lauren brand dress shirt (the  
17 "Shirt") after the Shirt came into contact after a small open flame.
- 18 15. It is also my understanding that Plaintiff contends that the Shirt was defective  
19 because it was not 100% Cotton, as labeled, but, rather, was "a highly  
20 flammable blend of cotton of other synthetic fibers which posed a risk of  
21 serious and permanent injury to an intended user and did not meet the  
22 flammability standards set forth in the Flammable Fabrics Act, 15 U.S.C.  
23 §1191, et seq., and its implementing regulations, including 16 C.F.R. Part  
24 1610". Plaintiff contends that the Shirt was within the class of wearing  
25 apparel deemed "highly flammable," "dangerous" and "unlawful" under the  
26 Flammable Fabrics Act due to its characteristic of rapid and intense burning.
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- 1 16. The Flammable Fabrics Act (FFA), 15 U.S.C.A. §1191, et seq., a Federal  
2 statue enacted in 1953, was promulgated "...to prohibit the introduction or  
3 movement in interstate commerce of articles of wearing apparel and fabrics  
4 which are so highly flammable as to be dangerous when worn by individuals  
5 and for other purposes."
- 6 17. The United States Department of Commerce (DOC), in accordance with the  
7 FFA, issued a standard for flammability of clothing textiles, Commercial  
8 Standard 191-53 (CS 191-53). All textiles intended to be used in the  
9 manufacture of clothing were required to comply with the CS 191-53.
- 10 18. The Consumer Products Safety Commission (CPSC) succeeded the DOC as  
11 administrator of the Act in 1972. In 1975, the CPSC published the FFA at 16  
12 C.F.R. 1609, and codified the Standard for Flammability of Clothing Textiles  
13 at 16 C.F.R. 1610.
- 14 19. Fabrics intended to be sold for use in some types of products are exempt from  
15 the provisions of the act, including hats, gloves and footwear.
- 16 20. The actual testing procedure is detailed in 16 C.F.R. 1610. The Standard  
17 provides methods of testing the flammability of clothing and textiles intended  
18 to be used for clothing by classifying fabrics into three classes of flammability  
19 based on their speed of burning. This minimum Standard specifies that  
20 textiles used in apparel must meet Class 1 or 2 flammability requirements.  
21 Class 3 textiles, the most dangerously flammable fabrics are unsuitable for use  
22 in clothing because of their rapid and intense burning characteristics.
- 23 21. The Standard states that Class 1 fabrics (or normal flammability fabrics) are  
24 textiles that exhibit normal flammability and are acceptable for use in  
25 clothing. This class includes textiles which meet the minimum requirements  
26 set forth as shown below in (1) or (2).
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21A. (1) Plain surface textile fabric. Such textiles in their original state and/or after being refurbished, when tested are classified as Class 1, Normal flammability, when the burn time is 3.5 seconds or more.

21B. (2) Raised surface textile fabric. Such textiles in their original state and/or after being refurbished, when tested are classified as Class 1, Normal flammability, when the burn time is more than 7 seconds, or when they burn with a rapid surface flash (0 to 7 seconds), provided the intensity of the flame is so low as not to ignite or fuse the base fabric.

22. The Standard states that Class 2, Intermediate flammability fabrics, a category applicable only to raised-fiber surface textiles, may be used for clothing. This class includes textiles which meet the minimum requirements set forth as shown below in (1) or (2).

22A. (1) Plain surface textile fabric. Class 2 is not applicable to plain surface textile fabrics.

22B. (2) Raised surface textile fabric. Such textiles in their original state and/or after being refurbished, when tested are classified as Class 2, Intermediate flammability, when the burn time is from 4 through 7 seconds, both inclusive, and the base fabric ignites or fuses.

23. The 16 C.F.R. 1610 Standard applies to all items of clothing, and fabrics used for such clothing, whether for adults or children, for daywear or nightwear. The Commission has other regulations governing the flammability of children's sleepwear (16 C.F.R. parts 1615 and 1616) but these do not apply here because the Shirt in the incident in question was not sleepwear.

24. Some fabrics, however, are exempt from flammability testing pursuant to 16 C.F.R. 1610.37(3)(d), which states:

"Exemption: Experience gained from years of testing in accordance with the Standard demonstrates that certain fabrics consistently yield acceptance results when tested in accordance with the Standard. Therefore, persons and

1 firms issuing an initial guaranty of any of the following types of fabrics, or of  
2 products made entirely from one or more of these fabrics, are exempt from  
3 any requirement for testing to support guaranties of those fabrics. 1. Plain  
4 surface fabrics, regardless of fiber content, weighing 2.6 ounces per square  
5 yard or more. 2. All fabrics, both plain surface and raised fiber surface,  
6 regardless of weight, made entirely from any of the following fibers or  
7 entirely from combination of the following fibers: acrylic, modacrylic, nylon,  
8 olefin, polyester, wool.”

9 25. On December 17, 2015, Plaintiff's attorney, Maria L. Weitz, Esq., of Boucher  
10 LLP brought the remnants of a burned shirt to Seal Laboratories, in El  
11 Segundo, CA, and represented to all present that these were the remnants of  
12 the Shirt worn by Plaintiff which is the subject of this litigation.

13 26. Also present, in addition to myself, were Janice Y. Walshock, Esq., of Tyson  
14 & Mendes; Rebeca Valenzuela, Esq., of Manning & Kass, Ellrod, Ramirez,  
15 Trester, LLP, counsel for Defendants; Thomas J. Fee of Fee Investigations;  
16 Dr. David G. Howitt; and Dr. Erik Richman of Seal Laboratories.

17 27. Following instructions agreed to by all present, Dr. Richman cut pieces from  
18 the Shirt for determining the areal density or weight per unit area of the fabric.

19 28. Five pieces of the Shirt were cut from the Shirt remains by Dr. Richman and  
20 the remainder was retained by Ms. Weitz. Several of the attendees took  
21 photographs of the various activities, and pieces of the shirt were also retained  
22 by Dr. Howitt.

23 29. The fabric used for the Shirt was a plain surface fabric and not a raised fiber  
24 surface fabric.

25 30. Four of the five pieces cut out of the shirt were measured and weighed using  
26 an analytical balance. The first piece was approximately a triangle and the  
27 others were approximately rectangles.

28 31. The pieces were weighed and then reweighed a few minutes later to get a  
second weight. Calculations were done with first and second weight and are  
set forth below:



31A. Piece 1: size 7.2 cm x 5.1 cm x 5.1 cm – area: 1300.5 mm<sup>2</sup> -- first weight: 0.1577 g – second weight 0.1572 g – Weight per unit area: first weighing: 3.58 ounces per square yard; second weighing: 3.57 ounces per square yard.

31B. Piece 2: size 3.7 cm x 3.7 cm x 3.8 cm x 3.8 cm – area: 1406.0 mm<sup>2</sup> -- first weight: 0.1612 g – second weight 0.1600 g – Weight per unit area: first weighing: 3.38 ounces per square yard; second weighing: 3.36 ounces per square yard.

31C. Piece 3: size 4.0 cm x 4.0 cm x 3.3 cm x 3.3 cm – area: 1320.0 mm<sup>2</sup> -- first weight: 0.1561 g – second weight 0.1551 g – Weight per unit area: first weighing: 3.49 ounces per square yard; second weighing: 3.47 ounces per square yard.

31D. Piece 4: size 3.6 cm x 3.6 cm x 4.7 cm x 4.7 cm – area: 1692.0 mm<sup>2</sup> -- first weight: 0.1961 g – second weight: 0.1958 g – Weight per unit area: first weighing: 3.42 ounces per square yard; second weighing: 3.41 ounces per square yard.

32. Thus, the fabric weight per unit area for the fabric used in the Shirt is approximately 3.46 ounces per square yard, which is well about the cutoff limit for requiring fire testing by 16 C.F.R 1610, which is 2.6 ounces per square yard. In other words, based on the weight alone, the fabric used to make the Shirt had normal flammability characteristics under federal standards and was safe for use in apparel.

33. Additionally, the Shirt fabric material was analyzed, following my instructions, at Seal Laboratories, by using Fourier Transform Infrared Spectroscopy (FTIR) and Chemical Separation via AATCC (American Association of Textile Chemists and Colorists) Test Method 20A, which sets

1        forth quantitative methods for determining percentages in blends of generic  
2        fiber types as defined by the Textile Fibers Products Identification Act and  
3        subsequent rules and regulations of the Federal Trade Commission.

4        34.    The purpose of this analysis was to differentiate between cotton (or a similar  
5        natural cellulosic material) and polyester, wool, nylon and the like.

6        35.    The result of the FTIR analysis indicated that the shirt material was purely  
7        cellulosic, basically a natural vegetable fiber (cotton) and that it was not a  
8        blend containing polyester, wool, or nylon.

9        36.    Further analysis of the cellulosic material, by submerging the fabric in 60%  
10       sulfuric acid for 20 minutes and weighing the dried remains, indicated that  
11       there was a small impurity (less than 5%) of a cellulosic material that is  
12       undetermined but could have been rayon.

13       37.    Rayon is a non-synthetic, manufactured regenerated cellulose fiber made from  
14       purified cellulose, primarily from wood pulp, which is chemically converted  
15       into a solid compound. It is then dissolved and force through a spinneret to  
16       produce filaments which are chemically solidified, resulting in fibers of nearly  
17       pure cellulose.

18       38.    A true and correct copy of the Seal Laboratories report is attached hereto as  
19       Exhibit 3.

20       39.    Under the Textile Products Identification Act, 15 U.S.C. § 70, some parts of a  
21       textile product do not have to be counted for labeling purposes even if they are  
22       made of a fibrous material. These include trim, linings (unless used for  
23       warmth), small amounts of ornamentation and threads holding a garment  
24       together. See 15 U.S.C. §70b(b)(1)-(2) and 16 C.F.R. §303.16(a)(1).

25       Therefore, under certain circumstances, a garment can still be labeled 100%  
26       cotton even if it has other fiber content.

1 40. A small (less than 5%) fraction of a cellulosic fabric that may not have been  
2 pure cotton could have been a result of the manufacturing process.

3 41. Therefore, even though FTIR analysis indicated that the Shirt material was  
4 less than 100% cotton, with up to 5% of some other cellulosic material, a label  
5 indicating that the shirt was 100% cotton might not be inaccurate since 100%  
6 cotton could have been used to make the fabric.

7 42. Nevertheless, the presence of up to 5% of this other cellulosic fabric in the  
8 shirt did not render the shirt any more dangerous from the flammability point  
9 of view than if it was 100% cotton and did not render it anything other than a  
10 fabric of normal flammability.

11 43. A reasonably heavyweight (over 2.6 ounces per square yard) cotton plain  
12 surface fabric, such as that used to make the Shirt, possesses normal  
13 flammability characteristics, and, in part because of this, is widely used  
14 throughout the clothing industry to make all types of clothing, including shirts  
15 for both adults and children.

16 44. I conducted research work on the flammability of fabrics tested under 16  
17 C.F.R. 1610 and in full scale, with the help of Joseph Zicherman and Peter  
18 Umino as co-authors, and it is attached as Exhibit 4.

19 45. The work indicates that there is a general trend, for all textiles, such that, as  
20 areal density increases, times to ignition and times for flame to spread to a  
21 certain location also increase. It is important to note that the fabric areal  
22 density (or fabric weight) data used to reach this determination included all  
23 fabrics, irrespective of their fabric composition (independent also, thus, of the  
24 fuel value of the fabrics).

25 46. This means that clear correlations were found between fire performance of the  
26 fabrics and fabric areal density data alone, irrespective of the fuel value of the  
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1 fabrics studied. Consequently, the correlation is the same, independent of the  
2 nature of the types of polymer the fabrics are made of.

3 47. The work described above included pure cellulosic fabrics, purely synthetic  
4 fabrics such as polyester or blends of cellulosic and synthetic fibers and the  
5 conclusions apply equally to all the fabrics.

6 48. This means that the flammability of fabrics that are not raised surface fiber  
7 fabrics is directly correlated to their weight per unit area.

8 49. This is consistent with the implications in the 16 C.F.R. 1610 Standard that  
9 relatively heavyweight plain surface fabrics (meaning those weighing above  
10 2.6 ounces per square yard) are of normal flammability, as was the fabric in  
11 the Shirt in question.

12 50. It is important to realize that all fabrics used for normal consumer clothing are  
13 combustible and that, accordingly, they will burn when exposed to an open  
14 flame. As stated above, it was and is the intent of the FFA to prevent articles  
15 of wearing apparel and fabrics that are so highly flammable as to be  
16 dangerous when worn by individuals and for other purposes.

17 51. Almost any fabric can be made to have improved flammability performance  
18 by the incorporation of flame retardants so as to decrease its flame spread  
19 characteristics under certain fire exposures.

20 52. Another technique to improve the flammability performance of a fabric is the  
21 use of back-coatings or of added surface layers with alternate, lower  
22 flammability, materials.

23 53. The use of any of these techniques could have been of interest if the fabric  
24 was to be used in an application intended as personal protective equipment  
25 (PPE).

26 54. However, the Shirt in question was not sold, or expected to be worn by a user,  
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1 as PPE. Therefore, the Shirt was adequate for use as clothing apparel and was  
2 not of excessive flammability.

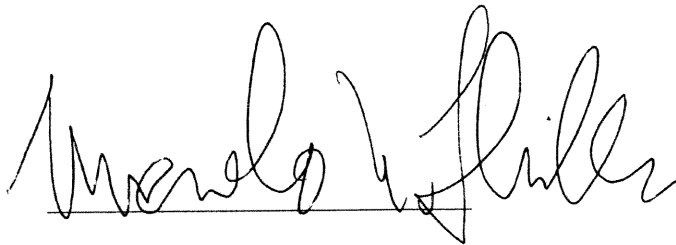
3 55. There are no federal or state statutes or regulations which require a warning  
4 on a label of an item of clothing that states that the clothing is combustible.  
5 Indeed, such a warning would be pointless since all fabrics used for consumer  
6 clothing are combustible.

7 56. Accordingly, based on all available information, it is my expert conclusion  
8 that the Shirt was not unsafe, defective (either in manufacture or design) or  
9 dangerously flammable. The Shirt also was not defective due to the absence  
10 of any warning.

11 57. The Shirt performed as safely as an ordinary consumer would expect when set  
12 on fire, and, given that the fabric used to make the shirt had normal  
13 flammability characteristics under federal standards, it could not have been  
14 manufactured or designed in any safer manner.

15  
16 I declare under penalty of perjury under the laws of the United States of  
17 America that the foregoing is true and correct. Executed on May 16, 2016, at Mill  
18 Valley, CA.

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A handwritten signature in black ink, appearing to read "Marcelo M. Hirschler", is written over a horizontal line.

Dr. Marcelo M. Hirschler